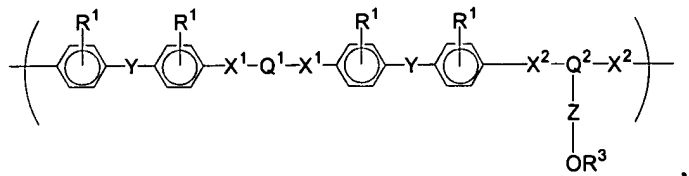


WHAT IS CLAIMED IS:

1. A polymer, comprising units having the formula



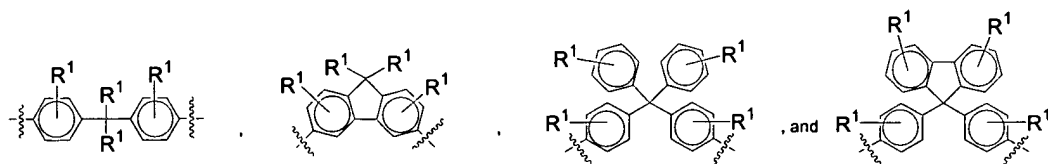
wherein:

- Q¹ comprises at least one aryl or heteroaryl group;
 Q² comprises at least one aryl or heteroaryl group;
 X¹ is O bonded directly to an aryl carbon of Q¹;
 X² is O bonded directly to an aryl carbon of Q²;
 Z is a linker comprising at least one $-(\text{C}(\text{R}^2)_2)-$ group;
 Y is a single bond or a linker group;
 R¹ is independently at each occurrence H, a halogen, an alkyl group, a heteroalkyl group, an aryl group, or a heteroaryl group;
 R² is independently at each occurrence H, an alkyl group, or a heteroalkyl group;
 and
 R³ is H or a crosslinkable group.

2. The polymer of Claim 1, wherein Q¹ comprises at least two aryl or heteroaryl groups.

3. The polymer of Claim 2, wherein Q¹ comprises a methylenediphenyl group in which the methylene carbon is bonded to at least 2 phenyl groups.

4. The polymer of Claim 3, wherein Q¹ is selected from the group consisting of

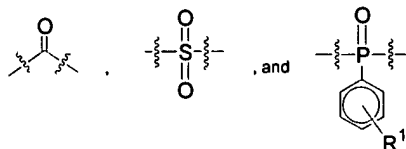


5. The polymer of Claim 1, wherein Q¹ comprises a polycyclic aromatic ring system or a polycyclic heteroaromatic ring system.

6. The polymer of Claim 1, wherein Y is a single bond, an alkene or an alkyne group.

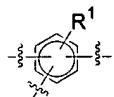
7. The polymer of Claim 1, wherein Y is a ketone, a sulfone, or a phosphine oxide group.

8. The polymer of Claim 7, wherein Y is selected from the group consisting of



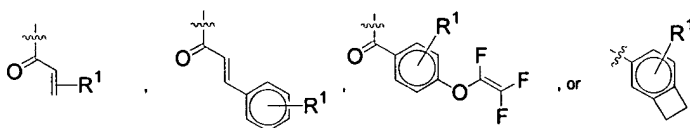
9. The polymer of Claim 1, wherein Q² comprises a 6-membered aromatic or heteroaromatic ring, a polycyclic aromatic ring system, or a polycyclic heteroaromatic ring system.

10. The polymer of Claim 9, wherein Q² comprises



11. The polymer of Claim 2, wherein Z is -(CH₂)_n- or -(CH₂CH₂O)_n-, wherein n = 1 to 10.

12. The polymer of Claim 1, wherein R³ is selected from the group consisting of



13. The polymer of Claim 1, wherein:

Q¹ comprises a methylenediphenyl group in which the methylene carbon is bonded to at least 2 phenyl groups;

Q² comprises a phenyl ring;

Y is a single bond; and

Z is -CH₂-

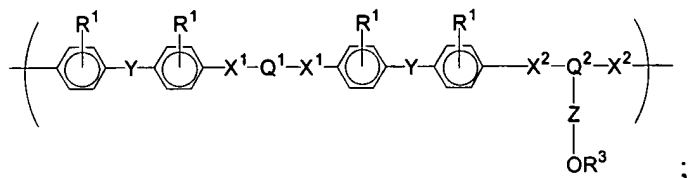
14. The polymer of Claim 13, wherein R¹ is fluorine.

15. The polymer of Claim 13, wherein R³ comprises an aryl trifluorovinyl ether.

16. The polymer of Claim 13, wherein the methylene carbon of Q¹ is bonded to at least three phenyl rings.

17. A composition made by a process comprising a) providing a precursor composition comprising a polymer and b) crosslinking the polymer, wherein:

the polymer comprises units having the formula



wherein:

Q¹ comprises at least one aryl or heteroaryl group;

Q² comprises at least one aryl or heteroaryl group;

X¹ is O bonded directly to an aryl carbon of Q¹;

X² is O bonded directly to an aryl carbon of Q²;

Z is a linker comprising at least one $-(\text{C}(\text{R}^2)_2)-$ group;

Y is a single bond or a linker group;

R¹ is independently at each occurrence H, a halogen, an alkyl group, a heteroalkyl group, an aryl group, or a heteroaryl group;

R² is independently at each occurrence H, an alkyl group, or a heteroalkyl group;

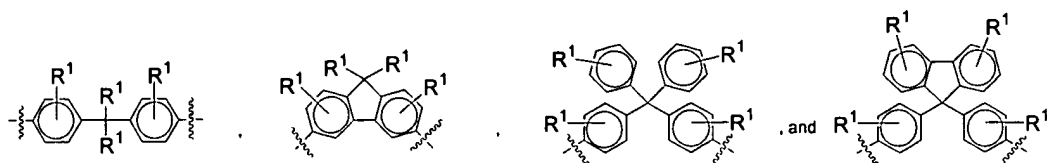
and

R³ is H or a crosslinkable group.

18. The composition of Claim 17, wherein Q¹ comprises at least two aryl or heteroaryl groups.

19. The composition of Claim 18, wherein Q¹ comprises a methylenediphenyl group in which the methylene carbon is bonded to at least two phenyl groups.

20. The composition of Claim 19, wherein Q¹ is selected from the group consisting of

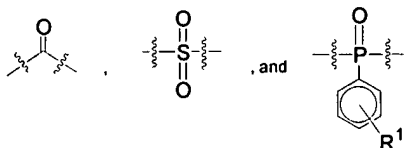


21. The composition of Claim 17, wherein Q^1 comprises a polycyclic aromatic ring system or a polycyclic heteroaromatic ring system.

22. The composition of Claim 17, wherein Y is a single bond, an alkene or an alkyne group.

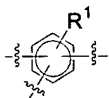
23. The composition of Claim 17, wherein Y is a ketone, a sulfone, or a phosphine oxide group.

24. The composition of Claim 23, wherein Y is selected from the group consisting of



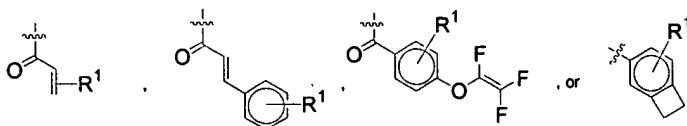
25. The composition of Claim 17, wherein Q^2 comprises a 6-membered aromatic or heteroaromatic ring, a polycyclic aromatic ring system, or a polycyclic heteroaromatic ring system.

26. The composition of Claim 25, wherein Q^2 comprises



27. The composition of Claim 17, wherein Z is $-(CH_2)_n-$ or $-(CH_2CH_2O)_n-$, wherein $n = 1$ to 10.

28. The composition of Claim 17, wherein R^3 is selected from the group consisting of



- 1 29. The composition of Claim 17, wherein:
2 Q¹ comprises a methylenediphenyl group in which the methylene carbon is bonded to at
3 least two phenyl groups;
4 Q² comprises a phenyl ring;
5 Y is a single bond; and
6 Z is -CH₂-
- 1 30. The composition of Claim 29, wherein R¹ is fluorine.
- 1 31. The composition of Claim 29, wherein R³ comprises an aryl trifluorovinyl ether.
- 1 32. The composition of Claim 31, wherein crosslinking the polymer comprises heating to at
2 least about 200 °C.
- 1 33. The composition of Claim 29, wherein the methylene carbon of Q¹ is bonded to at least
2 three phenyl rings.
- 1 34. The composition of Claim 17, wherein the precursor composition further comprises an
2 additive selected from the group consisting of diepoxides, diisocyanates,
3 diisothiocyanates, and combinations thereof.
- 1 35. The composition of Claim 17, wherein crosslinking is effect by heating above 200°C.
- 1 36. The composition of Claim 17, wherein crosslinking is effected by actinic radiation.
- 1 37. A device including an optical waveguide comprising the composition of Claim 17.
- 1 38. The device of Claim 37, wherein the optical waveguide comprises a core that includes
2 the composition of Claim 17.
- 1 39. The device of Claim 37, wherein the optical waveguide comprises a clad that includes
2 the composition of Claim 17.

40. The device of Claim 37, wherein the optical waveguide comprises a core and a clad,
both of which comprise the composition of Claim 17.